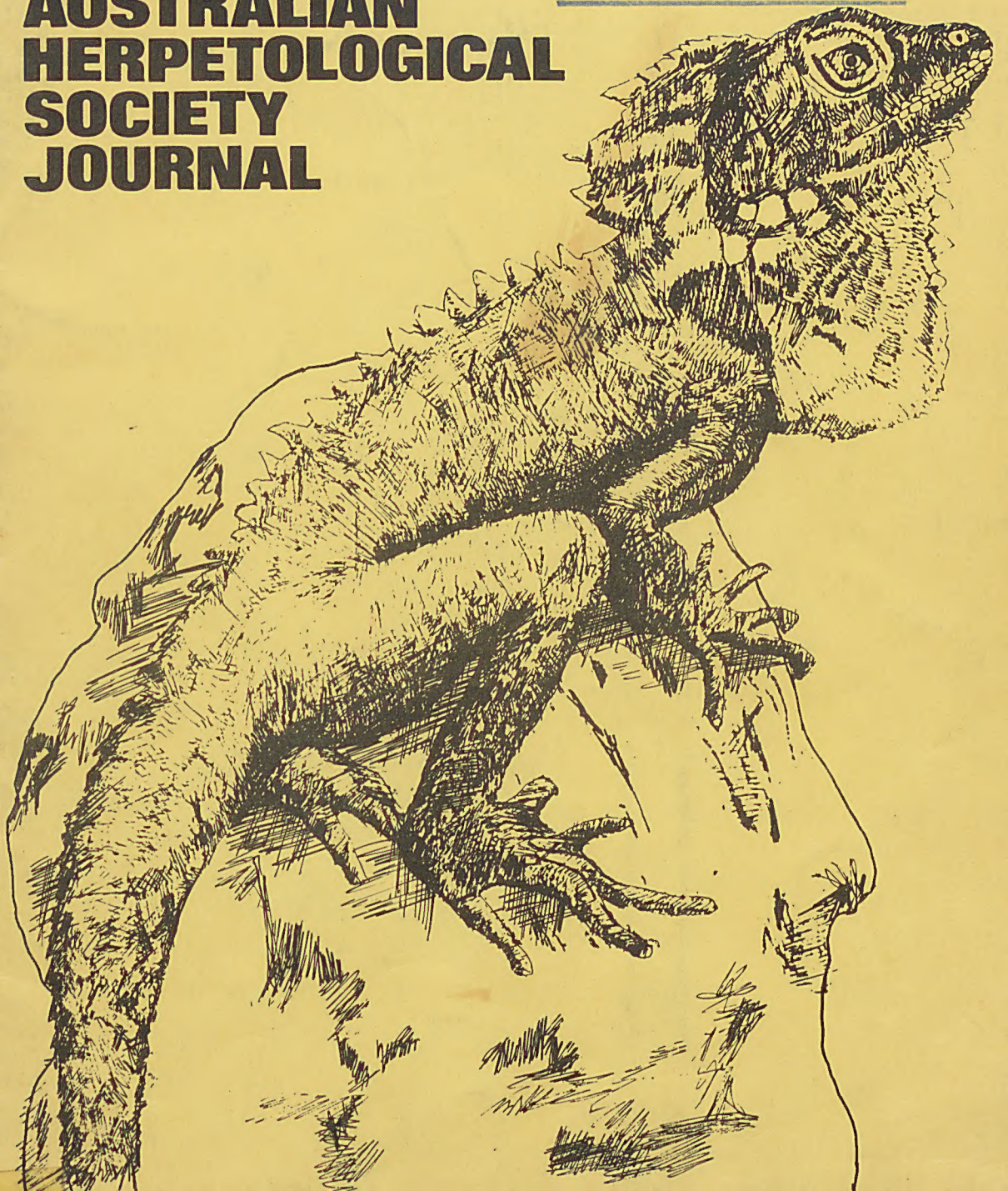
4(4)

DONATION FROM
Peter Rankin Trust Fund
For Herpetology

THE AUSTRALIAN HERPETOLOGICAL SOCIETY JOURNAL



AUSTRALIAN HERPETOLOGICAL SOCIETY

PATRON	Mr. Eric Worrell M.B.E.
LIFE MEMBER	H. G. Cogger, M.Sc.,Ph.D.

OFFICE BEARERS 1971-72

PRESIDENT	G. Swan
VICE-PRESIDENTS	G. Manning, J. Verhagen
SECRETARY/TREASURER	B. Lowe
LIBRARIAN	N. Leech

Meetings are held on the 3rd Thursday night of each month at 8 p.m. 1st Floor, Parramatta Town Hall.

Authors of articles contained in the journal are responsible for the opinions expressed and for the accuracy of the facts in their contributions.

COVER - Boyds Forest Dragon (Gonocephalus boydii)

Peter Rankin
12 Fridays Ave.
Eastwood 2122
Ph. 559 1269

H E R P E T O F A U N A

February, 1972. Vol. 4 No.4

CONTENTS

INDENTIFICATION OF THE BLACK-HEADED SNAKES (DENISONIA) WITHIN VICTORIA

by

A.J. COVENTRY

Originally published in the Victorian Naturalist Vol. 88 No.11.

The elapid snake genus Denisonia (sensu Boulenger, 1896) contains over twenty Australian species, including a number which bear a strong superficial resemblance in that they are relatively small (seldom exceeding 700 mm), have light brown bodies, and black heads. For this reason these species are often confused. However, there is no doubt that the similarities of some are due to convergent evolution, and that the group is polyphyletic.

This article discusses the Victorian species of black-headed snakes belonging to the genus Denisonia, and conservative toxonomic conclusions are made in an attempt to aid the identification of the species and help resolve some of the confusion surrounding them. It is recognised, however, that an Australia-wide revision is necessary before final taxomonic conclusions can be made. It should be pointed out that juvenile specimens of the Brown Snakes, Demansia textilis and Demansia nuchalis, which also have light brown bodies and black heads occur throughout Victoria. These can be separated very easily from the species under discussion, in that Demansia has divided anal and subcaudal scales, while the black-headed Denisonia species have single anal and subcaudals.

Rawlinson (1971) published a checklist of the reptiles known to have been collected in Victoria. This list includes five species of black-headed Denisonia, viz. D. brevicauda Mitchell, 1951, D. flagellum (McCoy, 1878), D. gouldii(Gray, 1841), D. Nigrostriata (Krefft, 1869) and D. suta (Peters, 1863.)

Recent sorting and checking of specimens in the National Museum of Victoria revealed that the Victorian snakes previously identified as D. brevicauda and D. nigrostriata are conspecific

(referable to D. brevicauda) and that Victorian specimens referred to D. gouldii belong to D. dwyeri. Thus it appears that there are only four species of black-headed snakes of the genus Denisonia in Victoria, and these are D. brevicauda Mitchell, 1951, D. flagellum (McCoy, 1878), D. dwyeri Worrell, 1956 and D. suta (Peters, 1863).

Key to the Species Found in Victoria.

1.	Black head patch divided	flagellum
	Black head patch undivided	2
2.	Scales in 19 rows	suta
	Scales in 15 rows	3
3.	Dark vertebral stripe present	brevicauda
	Dark vertebral stripe absent	dwyeri

Denisonia flagellum (McCoy, 1878) Little Whip Snake.

This is readily distinguished from other Victorian species by the head pattern, which has two distinct dark patches. The first of these begins on the rostral scale, and extends back onto the nasals and internasals, while the second extends from the anterior border of the frontal, back over the entire head and nape for some six or seven vertebrals. This leaves a pale band across the snout in the region of the prefrontals, which immediately separates this species from any other black-headed Victorian Denisonia. Although listed in the literature as having 17 scale rows, ten of the seventy specimens counted had only 15 rows at mid-body.
Distribution: The Museum has specimens from the Eyre Peninsula, S.A., through southern Victoria to the Melbourne area, and then northwards, on the western side of the Great Dividing Range to the A.C.T.

Denisonia suta (Peters, 1863) Curl Snake.

This species can be identified by both scalation and

colour. It always has 19 scale rows at mid-body (15-17 in the other species under discussion), and its head colouring is distinct in that the pre- and post-oculars are pale, and separated from the upper labials which are also pale, by a dark lateral stripe which extends on each side from the temporals forward, to meet on the rostral. In older specimens the black hood on the head tends to fade, although the lateral head stripe remains prominent.
Distribution: Confined to the north-central and north-west within Victoria, and extending into South Australia, Northern Territory, south-west Queensland and New South Wales.

Denisonia dwyeri (Worrell, 1951) Dwyer's Snake.

This species has been confused with Gould's Snake, D. gouldii which is confined to Western Australia. It differs from D. gouldii in either lacking, or having a much paler reticulated pattern over the body, having a flatter head, and a shorter, heavier body. The black head patch covers the entire head, except for the preocular, upper labial and rostral scales, which are a creamy colour. The head patch extends back for 4-6 vertebral scale rows behind the parietals. In one specimen examined there is a faint sign of a vertebral stripe, which is less prominent that found on D. brevicauda. Like D. brevicauda, this species has 15 scale rows at mid-body.
Distribution: Within Victoria, south-wards from the Murray River through the central regions and the western foothills of the Great Dividing Range to the Seymour district. The Museum has one early specimen labelled "Frankston", but some doubt exists as to its provenance. D. dwyeri also occurs in similar habitats from southern Queensland through New South Wales.

Denisonia brevicauda Mitchell, 1951. Mitchell's Short-tailed Snake.

This species has a similar head shape and pattern to D. dwyeri, and can be best separated from it by the dark vertebral stripe as well as a different habitat. Originally described as a subspecies of D. nigrostriata, a long-tailed species from

north-eastern Australia, these species can be readily separated from one another by the length of the tail, wich in D. brevicauda has 23-29 subcaudals (Mitchell, 1951) as against 50-64 (Boulenger, 1896) in D. nigrostriata.
Distribution: The warmer drier areas in the north-west of the State, from the Little Desert northwards to the Murray River. It also occurs in the adjacent areas of South Australia.

Acknowledgement: I thank Mr. P.A. Rawlinson of Latrobe University for offering constructive advice.

REFERENCES

Boulenger, G.A., 1896. Cat. Snakes in the British Museum 3: 343-4.
Krefft, G., 1869. Snakes of Australia: 70.
Mitchell, F.J., 1951. Rec. S.A. Mus., 9: 550-1.
Rawlinson, P.A., 1971. Victorian Year Book, 85: 11-36.
Worrell, E., 1956. Aust. Zool., 12: 202-5.
Worrell, E., 1963. Reptiles of Australia: 135-6.

Peter Rankin has supplied this data on the growth rate and pattern of a Cunningham's Skink (Egernia cumminghami) in his collection.

" It is a male which I received in November, 1970 at a total length of 4 inches. It still had its juvenile colouring of dark brown with yellow blotches dorsally.

By late March, 1971 it had almost completely lost its juvenile colouring and had reached a total length of 7.75 inches. However, it then stopped growing until early September and reached 8 inches by the end of that month.

From then on it grew exactly .5 inches each month except December when it grew .6 inches. By the end of January, 1972 it had a total measurement of 10.1 inches.

The specimen was fed raw meat laced with calcium, dandelion flowers, blackberries, bananas, tomatoes, small snails, sugar ants (Camponotus nigroceps) and insects. "

To stimulate the writing of articles for the Journal and to encourage members in the study of reptiles and amphibians, the Society is starting a competition. Prizes have been donated by a benefactor of the Society.

Members of the Society are invited to submit articles on any aspect of herpetology. A prize of $25.00 will be awarded to the article which, in the judge's opinion, makes the greatest contribution to Australian herpetology.

The judge will be Dr. H. Cogger Curator of Reptiles at the Australian Museum. The judge's decision will be final and no correspondence will be entered into regarding the results.

The winning entry will be published in the Journal, and the Society reserves the right to publish other entries.

The competition will be run six monthly, the first one closing on the 15th April, with results published in the May issue of the Journal. Minimum length of any article is 150 words, there is no maximum.

This is your chance to put observations onto paper and possibly make money at the same time.

Remember, articles must be received by the Editorial committee no later than 15th April.

THE TERRARIUM.

by

Mike Van Der Straaten

There are many conflicting opinions as to the best way of keeping snakes in captivity.

In my own experience most snakes, whatever their requirements in their original environment, do better in a dry cage with access to a draught protected dark spot and clean drinking water.

The cage which I have had complete success with is one designed and made by Mr. Greg Ackland of Beverley Hills, N.S.W. It measures 3' in length, 2' in width and 1'10" high in front and 1'6" behind.

It is simply a glass-fronted wooden box with a hinged lock-fitted lid at the top. The rear wall of the box being 4" lower than the front gives it a sloping top. In the middle of the wall on the right side (if you were to face the box) I fitted a gauze air-vent measuring 6" x 9".

Between the air-vent and the rear wall a $\frac{3}{4}$" hole is plugged with a hard rubber stopper. A plastic tube is connected to the hole from inside which hovers over the water-through. It is good to be able to replenish water within the cage from outside without having to open the lid and disturb its occupants.

The floor of the entire cage is fitted with a heavy duty wire gauze of $\frac{1}{8}$" mesh supported by a centre baton which enables it to withstand a good deal of weight.

Carefully arranged thin slabs of granite are placed upon each other on the gauze floor opposite to the side with the air-vent. The slabs of stone are placed in such a manner that a portion of darkness is always evident and free from any draught.

On the floor, next to the side with the air-vent, a shallow terra-cotta trough (12" in diameter) is kept filled with clean water to allow the snakes to drink or indulge in an occasional swim. Algae is left to form in the trough and never removed. This, I find, purifies the water and keeps it clear for long periods.

The cage is kept out-doors at all times with front of it facing a northerly direction. Positioned in this manner gives it ample sunlight (though filtered through the glass) in the winter months and minimises it during summer. In order to keep the cage dry during rainy periods a tin roof is fitted over the lid. The roof over-hangs and over-laps all around like the eaves round a house.

The whole cage stands on a wooden frame propped 18" off the ground. I nailed sheets of galvanised iron all around the frame to form a wall between the cage and the ground.

The ground enclosed below the cage is kept continually wet or damp by letting water into it once every week. The sun, during the day, heats up the galvanised iron causing a tremendous rise in humidity by evaporation of the wet soil. This humidity enters the cage through its wire-gauze floor. A very small gap between the cage and its stand permits an adequate air-flow into the cage as well. This, I believe, eliminates condensation and air-pollution and allows just the right amount of humidity inside the cage.

Humidity is essential for the continuity of a snakes soft and lustrous skin. It also facilitates the sloughing of a specimen.

Cleanliness is imperative for any reptile in captivity. In a cage of this design, keeping it clean is quite easy. All you do is remove its contents and occupants and hose it down with water from above. Having washed its contents separately replace them in the cage. Leave every-thing to air out and dry for a short while. Last of all, put the occupants in very gently.

Please note that this cage is not suitable for any burrowing snakes. Tree-climbing, rock-dwelling and surface snakes adjust themselves and thrive inside it.

Twelve years have seen snakes live, feed and mate quite normally within the confines of this cage, whereas, adverse conditions such as blizzards and heat-waves have taken their toll of differently constructed cages.

Keeping any temperate snake alive and healthy in this cage was an effortless task. As for the tropical species I have only kept two, a Slatey-grey Snake (STEGONOTUS MODESTUS) and three specimens of Keelback Snakes (NATRIX MAIRII). Without the aid of any heating apparatus these four snakes from the tropics survived two winters here, before being given away.

The slabs of granite absorb a large quantity of heat from the sun during the day and retain it throughout most part of the night. This would keep temperatures inside the cage warmer during winter nights.

Minimum temperature attained within the cage for the two winters was 40°F. compared with external minumum temperature of 32°F. The maximum summer temperature within was 95°F. and 101°F. outside (in shade). According to my records there were only seven mornings with such low temperatures during the two winters and two afternoons in the summer in between that reached the century.

It must be understood that the winters endured by the four tropical snakes were exceptionally mild ones. The summer was equally mild. Because of this, I was exceedingly lucky. A few continuous days of extremely cold weather during either of the winters or a couple of really hot ones in the summer would have certainly resulted in death to the specimens.

NEW MEMBERS.....

S. Boys. 183 Bathhurst St.,
Condobolin. NSW. 2877.
Interests: Aust. lizards and non-venemous snakes.

Miss J. Covacevish. C/- Queensland Museum,
Gregory Tce.,
Brisbane. QLD. 4000.
Interests: Taxonomy of Aust. reptiles and amphibians.

Miss J. Craig. 147 Arundel St.,
Forest Lodge. NSW. 2037.
Interests: General.

J. Craig. 147 Arundel St.,
Forest Lodge. NSW. 2037.
Interests: Snakes.

Mrs. M. Davies. 48 Seymour St.,
Hurstville Grove. NSW. 2220.
Interests: Encouraging study and interest in conservation of reptiles amoung pupils of our schools.

D. Fairhurst. 23 Charlotte St.,
Dundas. NSW. 2117.
Interests: General

P. Gates. 184 Moorefields Rd.,
Lakemba. NSW. 2195.
Interests: Monitors, Broad-headed Snakes, Pythons.

J. Harriott. 39 Campbell Ave.,
Dee Why. NSW. 2099.
Interests: Aust. Snakes and Lizards.

J. Harvey. 271 Blaxcell St.,
Granville. NSW. 2142.
Interests: Snakes and Lizards.

M. Huddy. 5 Howard St.,
Port Pirie. S.A. 5540.
Interests: South Australian lizards.

Mrs. S. Huddy. C/- Box 358 P.O.,
Port Pirie, S.A. 5540.
Interests: South Australian lizards.

K. Jacobson. 78 Croydon Ave.,
South Tamworth. NSW. 2340.
Interests: General.

Miss. P. McDonald. 3 Griffin Ave.,
South Bexley. NSW. 2207. Ph. 587-5427
Interests: Lizards and Tortoises.

S. Marsh. 22 Mitchell St.,
Lalor Park. NSW. 2147.
Interests: General.

Mr. & Mrs. R. Moran. 34 Clyde St.,
Croydon Park. NSW. 2133.
Interests: General.

B. Mules. 9 Daly St.,
Kurralta Park. S.A. 5037.
Interests: Dragon and Skink Lizards.

D. Neander. 57 St. Vigeons Rd.,
Reservoir. VIC. 3073.
Interests: Snakes and Lizards.

S. Neist. 62 Neriba Cres.,
Whalan. NSW. 2770.
Interests: Snakes and Lizards.

W. Petras. 45 Cormack Rd.,
Dee Why. NSW. 2099.
Interests: Lizards and Tortoises.

M. Purvis. 37 Matthew Ave.,
Lane Cove. NSW. 2066.
Interests: Venemous snakes and tortoises.

P. Rankin. 12 Finlays Ave.,
Earlwood. NSW. 2206.
Interests: Skinks of genus Egernia. Weights of reptiles and amphibians.

J. Reed. 5 Yallambee Rd.,
Lane Cove. NSW. 2066.
Interests: Reptiles and Amphibians in general.

G. Ryan. C/- Mrs. H. Cook,
17 Balmoral Ave.,
Mosman. NSW. 2088.
Interests: Aust. Snakes.

Mr. & Mrs G. Sattler. 59 George Rd.,
Leppington. NSW. 2171.
Interests: Study of reptiles in natural state and in captivity.

Mr. & Mrs D. See. 46 Wheeler St.,
West Seven Hills. NSW. 2147.
Interests: Pythons.

Miss D. See. 46 Wheeler St.,
West Seven Hills. NSW. 2147.
Interests: Pythons.

J. Sharpe. 14 Valda St.,
West Pennant Hills. NSW. 2120.
Interests: General.

C. Thwaites. Cnr. Oliver and Brighton Sts.,
Harbord. NSW. 2096.
Interests: Snakes.

J. Wardale. C/- 7 Cross St.,
Forest Lodge. NSW. 2037.
Interests: History of Reptiles.

C. Warren. 113 North Rd.,
Ryde. NSW. 2112.
Interests: General.

REMINDER OF CONSERVATION

By DOUG ADAMS

It is essential that all people visiting the bush make a conscious effort to preserve the environment.

To herpetologists on field trips, particular attention should be paid to returning rocks and logs to their original postion after searching underneath. Rocks in particular should not be flipped over and left lying upside down. Nor should they be carelessly allowed to fall off cliffs. Such "rock-on-rock" environments took thousands of years to form. Don't let them be destroyed in a single second.

Rock-on-rock habitats support different animals in a food chain. The snakes eat the lizards which in turn eat the insects. So if you expose an insect's nest you are indirectly effecting the reptiles. Rocks should only be lifted up far enough to see underneath, and then slowly lowered back into position. Flat rock will shatter if simply allowed to fall back. Logs, after being rolled over, should be rolled back into their original position.

It is not only from the fauna's point of view that the habitat remain unaltered. For aesthetic reasons too, it is desirable to keep the bush looking the way it should. There's nothing worse to the naturalist than seeing vandalised bush-land. Also in this regard, all papers, tins and other litter should not be left lying around. Bury your rubbish or take it back with you.

Excess collecting is another fault which has to be watched. Persons on collecting trips should not bring home every specimen they come across. Bring back only those specimens that you particularly want, and have satisfactory accommodation for. You must also consider whether you will have adequate supply of food available when live specimens are taken home. Quality is better than quantity. It's much more rewarding to keep a few well fed animals than numerous starving ones.

When animals are returned to the wild for any reason, it is well to let them go in an area where the species in question occurs naturally. If you introduce animals into a foreign area, they may thrive and oust some of the native inhabitants. Thus you may contribute to the extinction of a species. Indiscriminate releasing may also confuse the researches of naturalists when they find a released specimen in a new area.

NOTES ON GROWTH AND BREEDING OF ACANTHOPHIS ANTARCTICUS A. By M. HAY.

FEMALE

Specimen collected at Sandy Hollow, N.S.W. on 2nd January, 1964. Colour brown banded - Length $11\frac{1}{2}$ inches.

MALE

Collected at Bundeena, Royal National Park. On the 3rd November, 1966. Colour grey with dark bands - Length 20 inches, (December, 1970 - 26 inches).

The difference between the sexes is distinguished by the Male having a much thicker and 50% longer tail.

GROWTH RATE OF FEMALE

Length	$11\frac{1}{2}$	inches on January, 1964
	$15\frac{1}{2}$	" on April, 1965
	$18\frac{1}{2}$	" on April, 1966
	22	" on April, 1967
	26	" on May, 1968
	29	" on April, 1969
	$30\frac{1}{2}$	" on December, 1970
	$31\frac{1}{2}$	" on April, 1971.

FOOD

Small Skinks, Geckoes, Coppertails, Water Skinks, Whites, Dragons, Blue Tongues, Finches and Sparrows.

Occasionally takes dead mice, never takes live ones. The Male feeds on mice only.

REPRODUCTION

Specimens observed mating on these dates:

Between January - March, 1968.
October - November, 1968.
October - December, 1969.

Mating usually lasting from 1-3 weeks. They did not mate at any time during 1970 indicating that mating takes place 12 months before having young.

March 11th, 1971 - 20 young born averaging approx. 5 inches. Colours vary but at this stage appear to be grey, brown and reddish. There were 11 Female and 9 Male.

The Female very restless for several days before dropping young. Continually moving around the tank.

METHOD

About 2 hours before having them she made a hole in the sand approx. 9 inches diameter and 3 inches deep. It made the hole by crawling round and round in a circle, head underneath her, scooping the sand out with the head. The young were deposited between 6.30 p.m. and 7 a.m. next morning.

The young first sloughed 8 on 25th March, 1971
8 on 26th March, 1971
4 on 27th March, 1971

Commenced feeding them on 28th March, 1971, giving them full grown Coppertails and half grown Water Skinks from birth.

26th April, 1971 average sizes range between 8 - 9 inches.
5th January, 1972 average sizes range between 13 - 15 inches.

PROGRAM FOR 1972

16.3.72. A selection of slides featuring fine reptile studies from the collection of R. Cook.

20.4.72. Diseases in Reptiles and Their Treatment - a talk by H.L. Hirschhorm. Vet. Surgeon.

18.5.72. Reptiles and Amphibians of Central Australia - a talk by Dr. H. Cogger.

15.6.72. A talk by a member of the National Parks and Wildlife Service including details of the legislation protecting reptiles.

11.3.72. Field Trip, by Charter Boat to the more inaccessable parts of the Hawkesbury River.
Limited to 26 persons - first come first served.
Cost $2.65 per head. Contact G. Swan 98-5646 for details.

Mrs. Sue Huddy of South Australia has passed on the following observation:- Eight earless dragons have just completed their egg laying. This has taken place during the past five weeks (16.12.71). It seems that these dragons do give their eggs a small amount of protection for a limited time.

While digging her burrow, the female keeps a sharp watch, surfacing regularly, gazing around, and if another lizard, even a small skink, comes to within about four inches of her burrow, she chases it away vigorously, biting if the intruder does not take the hint immediately. For about a week after the eggs have been laid the female seems to keep watch and if another lizard begins a burrow within close range of the original site she will immediately begin to cover it in and often the second burrower gets buried as well. This behaviour has been observed in captivity and I have been unable to confirm it in the wild.

THE ORIGIN OF REPTILES

by DOUG ADAMS

PART III

The largest Souropod was Brachiosaurus, with an estimated weight of fifty tons. We know that Sauropods were amphibious because of the nostrils and eyes being situated on the top of the head. However, mathematicians could also tell us this, but not for the same reason. Although the legs of the Sauropods were large and thick, it has been calculated that to support the weight of the animal on dry land, the legs would have to have been more massive. Hence an amphibious habitat was essential, their bodies buoyed up by the water. The Sauropods were vegetarians, and lived in swamps and lagoons.

Another four footed Dinosour was Triceratops. This vegetarian walked on land and was not in the same group as the Sauropods. This animal had a broad frill of bone coming from the back of the skull. The purpose of this was to protect the neck region which is a favorite place of attack by predators. Triceratops had two bony horns on top of the skull and one on top of the nose.

Dinosaurs were extremely varied in shape, size and habits. Here we have not by any means dealt with all the groups.

An interesting evolutionary line was the pterosaurs or pterodactyls. These were the flying reptiles, and lived during the latter two-thirds of the Age of Reptiles. Pterosaurs had nothing to do with the evolution of birds. They were a completely separate line and had nothing in the nature of feathers. Thus we see that the reptiles evolved flight twice.

Pterosaurs had the fourth finger tremendously elongated; this finger being the sole support of the wing, a bat-like flap of skin which ran back to the thigh region. These aerial reptiles appear to have been fish eating types, flying over the water and diving after small fish much as do some modern sea birds. When not flying they could have hung from trees and cliffs like the bats of today; their legs being unsuited to walking.

Pterosaur types varied in size from forms no bigger than a sparrow to the Pteranodon which had a wing-span of twenty-seven feet. All Pterosaurs were extinct by the end of the Age of Reptiles. Birds superseded them as masters of the air.

The Age of Reptiles ended about 75 million years ago with the extinction of the Dinosaurs (and Pterosaurs). Climates changed. The cold blooded Dinosaurs had to hand over dominance of the land to the warm-blooded mammals.

This decline and extinction of the Dinosaurs was not a particularly rapid phenomenom. Dinosaur species came and went during the millions of years of the Age of Reptiles. However, the time came when all species were gone. This gradual extinction is not the result of any one factor. The cumulative effect of many different factors is involved. Climate and geography gradually changed; the Dinosaurs were unable to live in the new world. Over great areas of land the sea, warm conditions, to which the Dinosaurs were irrevocably adapted, changed into cooler climates. Great mountain chains were rising, resulting in cooler habitats. Reptiles have no coverings of fur or hair to provide insulation against environmental heat changes. Another geographic change was the innundation of large land areas by the sea. This was one of the greatest transgressions of the sea ever known in the Earth's long history. A great part of the reptile life must have revolved around the vast swamps and lakes of the time. The uplift of the land to form mountains must have resulted in the draining of at least a few of these choice habitats, whilst the spreading sea could have swallowed up others. Perhaps one of the greatest factors was the change in flora resulting from the cooler climates. The vegetation was changing to new plants that apparently were unsuitable for Dinosaur food. For the first time there were trees and plants barren of leaves through the cold winter months. As the herbivorous Dinosaurs dwindled in number, so did the carnivorous types that preyed upon them.

Having dealt with the different types of extinct reptiles, we will now return to living forms.

We will recall that the living reptiles already discussed, the turtles and the rhynchocephalian, (tuatara from New Zealand), evolved from the "stem-reptiles" before the Age of Reptiles was under way. These are truly ancient forms.

The next oldest type of reptile is the crocodile which evolved from the "stem-dinosaurs" during the first half of the Age of Reptiles. Thus fully evolved crocodiles lived along side the Dinosaurs for half of the great reptilian eras, and still exist today. This means that the crocodiles have existed for 160 million years.

These animals are amphibians in habit, living in rivers and lakes. It can be seen that the modern alligators, crocodiles and gavials have wandered far from the bipedal method of walking which the stem-dinosaurs had developed, although they still have, one may note, the long hind legs and short front ones that are characteristic of the group.

We now come to the last order of reptiles in our story, the most recently evolved of the lot, lizards and snakes.

The lizards are the most abundant of living reptiles. There is a host of different types and they are plentiful in the tropical and warmer temperate regions of the world. The average lizard is a small animal, the largest living lizard comes from the island of Komodo in the East Indies. This monitor (goanna) is called the Komodo Dragon, and attains a length of about a dozen feet. In Asia monitors twice this size have existed within the last million years.

In Australia we have about 300 kinds of lizards. Fossil lizards are not known from the first half of Age of Reptiles.

A development from the lizard stock are the snakes. The lizards in their struggle for survival have tried to occupy every ecological niche they can. Thus we find in some lizards, a very

strong trend towards becoming burrowing forms. Legs would only be a hinderence in an underground life. Thus today there are numerous forms throughout the world in the evolutionary process of discarding the legs. We can find different lizards having five, four, three, two, one or no toes on each limb. Lizards with the front legs absent or all four legs absent can also be found. The fusion of the eyelid into a transparent scale is one characteristic of the snake clan. Lizards can be found with the lower eyelid partially transparent or wholly transparent. There are many kinds to be found with their transparent lower eyelid fused to the upper eyelid exactly as it is in the snakes. The point of the change in the eyelids, going on in the burrowing lizards, is to keep soil or sand out of the eyes. From bones of the skull we can see that snakes, the most recently evolved reptiles, are not too distantly related to the lizards. The oldest family of snake the Pythons, still has vestiges of leg and hip bones. From the foregoing we can see that the difference between lizards and snakes does not lie in the absence or presence of legs.

The true distinctive feature lies in the jaws. In the snakes the lower jaw is not joined at the front; and each half can be readily spread spart, in fact the entire jaws are loosely attached to the skull, making the gape of the mouth enormous. Thus snakes half a dozen feet long can swallow prey up to the size of a rabbit, and digest it at leisure. Another way to tell a lizard from a snake is that the former has ears whereas the latter does not. The majority of snakes are not large. Few snakes exceed 10 feet in length. Only four or five pythons exceed a length of twenty feet. The longest, the Reticulate Python of Asia, can approach the thirty foot mark. A specimen in a zoo was reported to be twenty-eight and half feet long. A length of thirty-three feet has been claimed as the record. This often quoted record was taken in the field with a rifle used as the measuring device.

There is only one poisonous lizard in the world. The Gila monster of North America. However, quite a large proportion of snakes are venomous. The poison, a highly modified saliva, is

produced in venom-glands adjacent to certain teeth in the upper jaw, usually a pair near the front of the mouth. In some cases these teeth have a groove down one edge through which the poison may trickle into the wound; in the more hightly developed forms the tooth is hollow, exactly analogous to hypodermic needle in construction. The first snakes evolved during the latter parts of the Age of Reptiles. We have now dealt with all the living orders of reptiles; the turtles, the Rhyncocephalian (tuatara of New Zealand) the Crocodiles, the Lizards and Snakes. We have also dealt with most of the extinct orders. We have traced their evolution from the lobe-finned fish, through the early amphibians, the stem-reptiles, and in the majority of cases through the stem dinosaurs.

We have, I hope, supplied the reader with a little background, and a little general knowledge, of the fascinating world of the reptiles.

Another observation supplied by Peter Rankin.

"On a recent trip to Tamworth I was surprised to find the Striated Skink (Egernia striolata) to be exclusively ground-dwelling in the area. They inhabit rocky screes and boulders alongside the White's Skink (Egernia Whitii). There is no major shortage of the proper habitat in the trees, of upturned bark or hollow logs, and the species is most definitely Egernia striolata. The two captive specimens which I have from the area - a male and female, seem to behave much as others of their species do, i.e. climb trees etc, but are noticeably tamer than others - accepting food from the fingers after only one weeks captivity."

SNAKES & LADDERS

"Parks and Wildlife" Vol. 1 No. 1, a publication of the National Parks and Wildlife Service, appeared in August, 1971 and is recommended reading for all members. (Its also free!) It is an exceptionally well produced journal with a wide range of articles and reviews.

One review which immediately caught our attention was "The Wedge-tailed Eagle", by A.K. Morris and A.M. Fox, Wildlife Division N.P.W.S. An extract of interest to Heretologists is quoted:-

> "Reptiles are significant in that they were recorded prey items in all of the study areas, having greatest importance in north-western New South Wales and south-west Queensland where they represented 18% of the grey species identified. Bearded Dragons were the most common. At Carnarvon two-thirds of the nests has remains of reptiles, especially shinglebacks and even quite small species only 5 inches long were present. The importance of reptiles in the eagle's diet in arid areas is primarily a function of availability. Important species are Bluetongue, Rock Skink, Monitor and Goanna. In contrast to the Golden Eagle, snakes are not a feature of the Wedgetail's diet."

The following is part of an article taken from Reptilia Vol 1. No. 2 February, 1954 which members, particularly those in Sydney, will find interesting.

"During recent years serious collecting by members of the A.R.C. has brought to light many species believed to have been exterminated in the Sydney area, as well as adding records of one or two not previously known around Sydney.

For instance, the Broad-headed Snake (Hoplocephalus bungaroides)

is now known to be fairly common in the Rocky hillsides of National Park-Waterfall district, Helensburgh, Burragorang and in the Blue Mountains aroung Lawson; Burragorang being the most southern record. Old records show that this snake was once very common on the coast-line from Port Jackson to Botany Bay, on the shores of Middle Harbour, Lane Cove and Parramatta Rivers. In the early 1900's specimens were captured at Long Bay, and the last specimen to be caught in Sydney was at the old Randwick rifle range in 1934. Since then no specimens were recorded closer to Sydney than the Blue Mountains, until 1948, when a club member, caught one at Waterfall. Since then several specimens have been caught in that area and at Burragorang. The dorsal surface is black with narrow bands of yellow spots, the underside is a leadon-grey colour and the broad ventral scales are angulate at the ends. This angulation forms a continuous keel and enables the snake to climb small trees and shrubs where they have occasionally been captured.

The Death Adder (Acanthophis antarcticus) is fairly common on the rocky sandstone ridges near Sydney, as massacred specimens and newspaper reports of bites show. Although intensive hunting for this snake near Sydney has been going on for the past few years only one small specimen has been captured. This was at Norah Head. A few years ago the record size Death Adder was killed near Seaforth. It measured $36\frac{1}{2}$ inches. Specimens have been recorded at National Park, Waterfall, the Blue Mountains (particularly round Woodford, Lawson and Haselbrook) Kuringai Chase, and from Manly to Palm Beach. Norah Head, near Tuggerah, is a favoured hunting ground for this species and a few good specimens have been seen there.

The Bandy-Bandy (Furina annulata) is another snake which is rarely seen roung Sydney. However, it is probably more common than records indicate, as its burrowing and nocturnal habits make it easily overlooked. Recently club members have captured specimens at Kurnell, Jibbon, Bundeena and French's Forrest and most of these have been found on rocky slopes where there is little soil for them to dig into during the daylight. It is known to occur at the southern end of National Park south to Stanwell Park."

OFFICE BEARERS

President	G. Swan	112 Waratah Pde., Narraweena. N.S.W. 2099. Ph. 98-5646 27-8811.
Vice Presidents	G. Manning	"Buckingham", Box 57, Bungendore. N.S.W. 2621.
	J. Verhagen	263 Harbord Rd., Dee Why. N.S.W. 2099. Ph. 939-1903 27-8811.
Secretary/Treasurer	B. Lowe	2/5 Mona Vale Rd., Pymble. N.S.W. 2073. Ph. 92.6051.
Librarian	N. Leech	28 Derria St., Canley Vale. N.S.W. 2166. Ph. 727-8568.

Articles, letters, comments etc. for the Journal should be fo warded to the editorial committee, G. Swan and J. Verhagen.

THE AUSTRALIAN HERPETOLOGICAL SOCIETY

This Society was formed to enable people interested in reptiles and herpetology to meet regularly together.

The aims of the Society are:-

(1) To collect and exchange information on all aspects of Australian reptiles and amphibians.

(2) To encourage the study of reptiles and amphibians - both in their natural state and in captivity.

(3) To promote a sane and reasonable attitude to reptiles and amphibians among the general public.

(4) To organise field work in all parts of Australia and to render all possible assistance to members on collecting trips away from their home territory.